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Leaflet

50X1

PROGRESS REPORT

FOR

JUNE 1956

ON

4-INCH ROCKET

1210-E-1

July 19, 1956

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During June, new tubing arrived from Formica and was tested statically. The increased diameter results in an increase in the force attempting to blow out the end plug and nozzle due to the greated area on which the pressure can act. Because of this increased force, a Kn value lower than usual was necessary so as to reduce the operating pressure. Three, ten-inch grains were satisfactorily static tested in a thick walled 1-1/2" tube. This propellant loading approximates that expected for the 3,000 meter range.

A new type monorail launcher was completed and tested. In this design, the rocket hangs from a flange, which interlocks with a mating flange on the launcher rail. The rail system functioned as well as expected, but the blast from the motor lifted the tail of the launcher, changing the direction of the flight.

Four units were made, using large size tubing and delta fins, each weighing 2.9 pounds loaded. Two units contained twenty-two ounces of payload and two contained thirty ounces of payload. The latter required an additional three inches of body length.

The four rockets had an average flight distance of 1080 meters, landing within a circle 50 meters in diameter, which corresponds to a dispersion of 46 mils. On the basis of these tests, the drag factor "C" was computed and the ratio of propellant weight to empty weight was considered finalized.

Following the static test of three, ten-inch grains, rockets were constructed which were designed for 3000 meters. These units were test fired into an earth covered hillside at a distance of 125 feet. Each unit suffered a blown nozzle and upon examination it was found that the grains had split, thereby causing a sudden increase in pressure. A means to combat this splitting was devised for the next two models. The grains were perforated through the web with holes 1/16" in diameter, 1-1/2" apart. One of these models apparently reached full acceleration, burying deeply into the hillside. No damage was observed due to acceleration effects.

Future Work

Since the project funding expires June 30, 1956, no physical effort can be anticipated although design and planning will continue.

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Financial Statement

Total Amount of Contract (Phase II)

Obligations for June, 1956

Total Obligations to June 30, 1956

Balance of Contract

Expiration Date - June 30, 1956

7/30 mt.